a door, window, skylight or other enlarged area. If desired, a great number of wires could be used to protect an entire room, building or other area.

As previously noted, the circuit shown might also be applied to an ionization or combustion detection system employing ionization chambers such as shown in the previously referred to copending application of applicant wherein series-connected ionization chambers form a voltage dividing network, the junction of which is connected to the gate of a field effect transistor. The combustion chambers are equivalent to the voltage dividing resistors shown in the above embodiments of the invention and the circuit will function similar to that previously described, with the change in the combustion gases producing the voltage change necessary to trigger the field effect transistor which in turn directly triggers the silicon controlled rectifier or other similar triggered device.

The illustrated circuit provides detection of both a positive change and a negative change in the electrostatic potential of the sensor. The sensitivity of the circuits **3** and **4** is separately adjustable by the potentiometers **15** and **15'**.

Further, if desired, the detection system might be constructed to respond to only a negative or a positive signal by employing either circuit **3** or **4**.

The present invention broadly covers the concept of sensing devices having a high direct current resistance such as impedance grids, ionization chambers and high resistance humidity sensing elements and the like. In either case the sensors are connected into a voltage division network or bridge circuit to provide a voltage output responsive to changes in a sensed condition for controlling a field effect transistor. More particularly, the present invention includes a unique combination of an intrusion detection sensing means for triggering of a field effect transistor or the like.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. Intrusion detection apparatus employing a high impedance sensing means for detecting intrusion into an area, comprising a low voltage direct current power source connection means, an antenna means connected to said direct current power source connection means and defining an electrostatic charge source producing a distinct change in charge responsive to movement of a spaced intruder into the area, and an electrostatic charge detection circuit connected to the power connection means and including an electrostatic charge responsive direct current non-oscillating amplifying means having a field effect transistor with a high input impedance and gate terminal means connected in a bias network to said direct current power source connection means and to said antenna means and having an output means establishing an amplified varying amplitude output corresponding to the electrostatic charge on said antenna means, said high input impedance maintaining the charge of said antenna means and thereby a corresponding output over an appreciable period to provide reliable and accurate detection.

2. The apparatus of claim **1** wherein said field effect transistor is connected to the power source connection means in series with a small resistor and including a triggered switch means having an input circuit means connected across said small resistor whereby said triggered switch means is actuated in accordance with the signal at said antenna wire, said small resistor bypassing spurious signals from said input circuit means.

3. The intrusion detection apparatus of claim **1** wherein said antenna means includes a plurality of spaced wire-like members having one common connected end connected to said input terminal means and a plurality of spaced free ends.

4. The detection apparatus of claim **1** wherein said bias network includes a pair of voltage dividing resistors connected to the power connection means with the common junction connected to said gate terminal means.

5. The detection apparatus of claim **1** wherein said amplifying means includes a second field effect transistor, each of said transistors having a gate as the input terminal means, one of said field effect transistors being constructed to respond to a positive gate signal and the other to respond to a negative gate signal.

6. The detection apparatus of claim **1** wherein said detection circuit includes a pair of sensing circuits, one of said sensing circuits including said field effect transistor connected as a source stabilized amplifier and having a gate connected to the antenna means to respond to a relatively increasing negative potential at the antenna means, the other of said sensing circuits including a second field effect transistor connected as a source follower amplifier and having a gate connected to the antenna means to respond to a relatively increasing positive potential at the antenna means.

7. The detection apparatus of claim **1** wherein said detection circuit includes a common power supply, said biasing network including a pair of voltage dividing resistors connected to said power supply and having a common junction, said antenna means being connected to said common junction, a pair of sensing circuits, one of said sensing circuits including said field effect transistor connected as a source stabilized amplifier to said power supply and including a drain resistor connected in series with a drain electrode and having a gate responding to a relatively increasing negative potential, the other of said sensing circuits including a second field effect transistor connected as a source follower amplifier to said power supply and including a source resistor connected in series with a source electrode and having a gate responsive to a relatively increasing positive potential, a resistor connected between said common junction and both of said gates, and a pair of solid state triggered switch means each having trigger input electrodes, the input electrode of one of said triggered switch means being connected across the drain resistor and the input electrodes of the other being connected across said source resistor.

8. The detection apparatus of claim **1** wherein said detection circuit includes a common power supply, said biasing network including a pair of voltage dividing resistors connected to said power supply and having a common junction, a pair of sensing circuits, one of said sensing circuits including said field effect transistor connected as a source stabilized amplifier to said power supply and having a gate respnosive to a relatively increasing negative potential, the other of said sensing circuits including a second field effect transistor connected as a source follower amplifier to said power supply and having a gate responsive to a relatively increasing positive potential, and a resistor connected between said common junction and said gates.

9. Detection apparatus, a high impedance sensing means for detecting selected changes in an adjacent area,

a low voltage power source connection means,

a detection circuit including a field effect transistor having a high input impdeance and input terminal means connected to said high impedance sensing means to control conduction in accordance with the electrostatic charge on said antenna means, said transistor connected to the power source connection means in series with a small resistor, and

a triggered switch means having an input circuit means connected across said small resistor whereby said triggered switch means conducts in response to conduction by said field effect transistor, said small resistor bypassing spurious signals from said input circuit means.